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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 2000	
APPROPRIATION/BUDGET ACTIVITY RDT&E/Defense Wide/BA 3							R-1 ITEM NOMENCLATURE Explosives Demilitarization Technology PE 0603104D8Z		
COST(In Millions)	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total Program Element (PE) Cost	13.379	23.635	8.964	9.265	10.600	11.803	11.985	Continuing	Continuing
JDTP/P486	13.379	23.635	8.964	9.265	10.600	11.803	11.985	Continuing	Continuing

(U) **A. Mission Description and Budget Item Justification**

(U) **BRIEF DESCRIPTION OF ELEMENT**

(U) The Explosive Demilitarization Technology Program is a cooperative interservice, interagency effort focused as the sole Department of Defense (DoD) program dedicated to the development of safe, efficient and environmentally acceptable processes for the resource recovery and recycling (R3) or disposition of strategic, tactical, and conventional munitions including explosives, and rocket motors. Efforts in this program emphasize environmentally compliant technologies to enhance existing methods for munitions R3 and treatment and seeks alternatives over that of open burning/open detonation (OB/OD). There are currently over 500,000 tons of these materials requiring disposition with a forecast of over 1,450,000 tons to flow through the stockpile by 2005. This is funded under Advanced Technology Development based upon its supports to the development and exploration of new munitions concepts and technology preceding system engineering development.

(U) The effort employs the highly developed technology base in the DoD Service Laboratories and Technical Centers, the Department of Energy (DoE) National Laboratories, industry, and academia. The program is integrated through the leadership of the Joint Ordnance Commanders Demilitarization Subgroup and seeks to leverage support from the Department's Environmental Security Technology Certification Program (ESTCP), the Strategic Environmental Research and Development Program (SERDP), the Joint DoD/DOE Munitions Program, and complementary Service science and technology programs. Each project is required to include a federal laboratory sponsor and is provided peer review by the Joint Working Group. The Demilitarization Users Group is utilized to assess and review ongoing and emergent demilitarization requirements for use in planning future investments for this program. The program supports an annual Global Demilitarization Symposium, which focuses on technology transfer opportunities and the technical review and data evaluation from ongoing projects and advanced demonstrations. This program was established pursuant to Section 226 of the National Defense Authorization Act Fiscal Year 1996 (Public Law 104-106) and Section 227 of the National Defense Authorization Act for Fiscal Year 1997 (Public Law 104-201). The program provides an annual report to the Congress, which provides a detailed plan update on technology investments, accomplishments, and future planned investment areas. Recent annual reports; FY 1998-Department of Defense Joint Demilitarization Technology Program (March 1999) and the FY 1999-Department of Defense Joint Demilitarization Technology Program (February 2000).

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COST(In Millions)	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
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(U) **Project Number and Title: P486 JDTP**

(U) **PROGRAM ACCOMPLISHMENTS AND PLANS**

(U) **FY1999 Accomplishments:**

(U) Conducted tunnel detonation demonstrations at the Nevada Test Site (NTS) to replicate and optimize depot-type field configurations. Data was collected using EPA Standard methods. Off-line analysis of bulk gases, volatile organic chemicals (VOCs), semi-volatile organic chemicals, metals and particulates were performed. Designed and constructed improved molten salt reactor. Conducted 3 successful oxidation tests on demilitarization waste materials. Began installation of the contained burn chamber at the NTS for future use in demilitarization of tactical rocket motors.

(\$ 6.589 Million)

(U) Completed validation testing on Hydrothermal Oxidation unit - test processed over 50,000 lbs. of waste material. Completed design for prototype tactical missile cryowashout system.

(\$ 2.000 Million)

(U) Flight motor energetics material from the Hellfire and Tubular launched Optically tracked Wire guided (TOW) missile systems were shown to be degraded in liquid ammonia. This process was further optimized using a state-of-the-art high flow system for increased processing rates.

(\$ 0.500 Million)

(U) Advanced cutting using high-pressure waterjet system was demonstrated and optimized for 40mm projectiles. Parameters that optimize nozzle configurations, process pressures, flow rates and cutting time were established in the cutting of Comp A-3. In addition the cutting of 1,000 5-inch 38 mm projectiles was demonstrated. Flexible workcell set-up and tooling for unpack, disassembly, and repack of munitions were developed.

(\$ 2.400 Million)

(U) Completed calibration curves and software development procedures for propellant stabilizer analyzer. Designed package and transportation case. Conducted in-house verifications of procedures.

(\$ 1.090 Million)

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(U) Conducted bench scale conversion of 10 lbs. Explosive D to commercial products through catalytic hydrotreating and reaction with Nitric acid. Products produced were picramic acid and picric acid.
(\$ 0.800 Million)

(U) FY2000 Plans:

(U) The Nevada Test Site Demonstration Program will continue in FY 2000. Additional tunnel detonations will be conducted allowing benchmarking events to be compared with improved procedures that will reduce both safety and environmental concerns. Design criteria will be developed for facility fragment and noise containment as well as reduced EPA regulated emissions. Complete installation of the Contained Burn Chamber and demonstrate destruction of shillelagh Rocket Motor. Investigate system modification to accommodate a variety of tactical systems. Begin transition of improved molten salt reactor to the base to include design and integrated advanced feed system. Joint Integration will continue.
(\$ 7.313 Million)

(U) Cryogenic technologies resulting from Propellant Removal and Treatment Process will be further studied for effectiveness on conventional and tactical systems. Hydrothermal Treatment of small quantity gun propellants and high explosive fillers will be conducted.
(\$ 3.000 Million)

(U) Critical Fluid optimization for specific applications to tactical and standard missile systems will be accomplished.
(\$ 2.000 Million)

(U) Resource recovery development for waterjet and advanced cutting techniques, such as, femtosecond lasers will be pursued for conventional systems demilitarization. The flexible workcell will be enhanced for use by munition items and families.
(\$ 4.030 Million)

(U) Portable Propellant Analyzers will be demonstrated in field trials and explosive work for AEDA and recovered materials will be initiated. Demonstrate the ability to efficiently recover RDX from Comp B, characterize the recovered RDX and establish the viability of using reclaimed RDX in insensitive munition explosive formulations. Complete design and initiate construction of transportable unit for propellant conversion to fertilizer.
(\$ 3.192 Million)

(U) Conversion of Explosive D to picramic acid and picric acid through catalytic hydrotreating and nitric acid reaction will be fully characterized. Pilot scale parameters will be evaluated and economic analysis initiated.
(\$ 1.100 Million)

(U) Development, demonstration and optimization of a hot gas decontamination system will be initiated. Demonstration will focus upon the treatment of residual energetics on items recovered during demilitarization.
(\$ 3.000 Million)

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(U) FY2001 Plans:

(U) The Nevada Test Site Demonstration Program will continue to focus on demonstrating improved field detonation operations. Detonation events will be designed and implemented based on data gathered from previous experiments. Facility fragment and noise containment designs will be tested and measured against EPA standards. Testing and modification of the Contained Burn Chamber will continue along with joint integration.

(\$ 5.764 Million)

(U) Advanced removal/conversion efforts will continue. Conventional systems treatability demonstration with cryogenic technology and optimization of hydrothermal oxidation will be completed with field demonstrations of second-generation design.

(\$ 0.750 Million)

(U) Critical fluid size reduction process application will be furthered with transportable/portable field unit demonstrations.

(\$ 0.350 Million)

(U) Advanced cutting and removal program will include flexible/agile process demonstrations for efficient processing of small quantity munitions items to prove out recovery values.

(\$ 0.650 Million)

(U) Analytical tools for explosive and propellant evaluation will continue to be optimized for recovered items.

(\$ 0.650 Million)

(U) Hydrogenation of energetic and other innovative processes to support conversion to higher value products will be accomplished.

(\$ 0.300 Million)

(U) Microwave energetic applications will move from bench scale to study of the selective decomposition of high explosives in the presence of other constituents and for anti-personnel land mine applications.

(\$ 0.500 Million)

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(U) <u>B. Program Change Summary</u>	<u>FY1999</u>	<u>FY2000</u>	<u>FY2001</u>	<u>Total Cost</u>
Previous President's Budget	14.442	11.183	11.029	Continuing
Appropriated Value	0.000	25.183	0.000	Continuing
Adjustments to Appropriated Value				
a. Congressionally Directed Undistributed Reduction	0.000	0.000	0.000	
b. Rescission/Below-threshold Reprogramming, Inflation Adjustment	(1.063)	(.921)	(.065)	
c. Other	0.000	(.627)	(2.000)	
Current President's Budget	13.379	23.635	8.964	Continuing

Change Summary Explanation:

(U) **Funding:** FY 1999 thru FY 2001 reflect changes due to programmatic changes, the government wide rescission and inflation adjustments.

(U) **Schedule:** N/A

(U) **Technical:** N/A

(U) **C. OTHER PROGRAM FUNDING SUMMARY COST:** N/A

(U) **D. ACQUISITION STRATEGY:** N/A

(U) **E. SCHEDULE PROFILE:** N/A

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